



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,302	12/28/2001	Byung Cheon Lee	K-0382	3073
34610	7590	04/03/2006	EXAMINER	
FLESHNER & KIM, LLP			SOL, ANTHONY M	
P.O. BOX 221200			ART UNIT	
CHANTILLY, VA 20153			PAPER NUMBER	
			2616	

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

**Office Action Summary**

Application No.

10/029,302

Applicant(s)

LEE, BYUNG CHEON

Examiner

Anthony Sol

Art Unit

2616

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 18 is/are rejected.
- 7) ☒ Claim(s) 14-17, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

- Applicant's Amendment filed 1/13/2006 is acknowledged.
- The amendment to claim 9 to correct informality is approved.
- Claims 1-4, 6, 7, and 9-17 have been amended.
- No claims have been canceled.
- No claims have been added.
- Claims 1-20 remain pending.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted Prior Art ("Prior Art") in view of U.S. Patent 5,642,347 ("Buckland").

Regarding claim 1,

Prior Art discloses receiving one or more AAL2 cells and extracting one or more CPS packets (Application, pg. 3, para. 8, lines 1-3; claim 1 - receiving one or more AAL2 cells that include a CPS packet including one of N data subsets of an original user data set; claim 1 - extracting said CPS packet from said one or more AAL2 cells received in (a)).

Prior Art further discloses converting the extracted packets to one or more AAL5 cells and transmits the AAL5 cells to the ATM switch 11 (Fig. 1). It is inherent that in order for the AAL5 cells to be switched by the ATM switch, the cells must have an ATM header (Application, pg. 3, para. 8, lines 3-5; claim 1 - generating an AAL5 cell by adding an ATM header to said data subset included in said CPS packet).

Prior Art further discloses that the first ATM cell converter 10 (Fig. 1) must store all the packets generated in order to convert them to AAL5 cells (Application, pg. 5, para. 13, lines 4-6; claim 1 - repeating (a) to (d) until said CPS packet extracted in (b) is a final CPS packet that includes an Nth data subset having its size of n bytes).

Prior Art does not disclose storing intermediate CRC and length values of said data subset included in said AAL5 cell generated in (c) in a memory without storing the data subset of the generated cell.

Buckland discloses a pipelined AAL5 circuitry (col. 2, lines 47-48) with SRAM storing the intermediate CRC calculation "tally" (col. 3, lines 61-65; claim 1 – storing intermediate CRC value). Buckland further discloses counting bytes following receipt of the signal (col. 2, lines 25-26) and this byte count (length value) is applied to the payload identifier. The length value must be stored in memory to be applied to the payload identifier (col. 4, lines 38-39; claim 1 – storing length value). Buckland further discloses intermediate data buffering is not required in his invention, thus eliminating the problem of delays due to storage of data in memory (col. 1, lines 63-65; claim 1 – without storing the data subset of the generated cell).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as admitted by the applicant as Prior Art to include a storing intermediate CRC and length value of AAL5 cells as taught by Buckland. One skilled in the art would have been motivated to make the modification to provide an indication to the ASIC of invalid data (Buckland, col. 2, lines 9-14) and an indication of the end of each packet with two byte length indicator (Buckland, col. 2, lines 58-61).

3. Regarding claim 2,

Prior Art does not disclose calculating total CRC and length values of said original user data set.

Buckland disclose when the end of each packet is indicated with an EPDU signal, preferably two bytes indicating the length of the packet are passed on TXData (col. 2, lines 59-61; claim 2 – calculating total length value)

Buckland further discloses when the last cell of a packet arrives, the final CRC value is calculated (col. 4, lines 8-9; claim 2 – calculating total CRC value).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as admitted by the applicant as Prior Art to include the calculation of total CRC and length values as taught by Buckland. One skilled in the art would have been motivated to make the modification to check for errors by comparing the final CRC calculation, after the last cell of a packet arrives, for the whole packet in the integrity

checker 15 (Fig. 2) with the expected value transmitted in the packet (Buckland, col. 4, lines 8-13).

4. Claims 3, 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art in view of Buckland, and in further view of Pub. No. US 2005/0238027 A1 ("Skarpness").

Regarding claim 3,

The combination of Prior Art and Buckland does not disclose generating an Nth AAL5 cell corresponding to said final CPS packet by adding a trailer containing said total values to a payload containing said Nth data subset if  $1 \leq n \leq 40$ .

Skarpness discloses that the final 8 bytes of the cell are filled with trailer data including AAL5 length and final CRC values (pg. 3, para. 30, lines 12-15).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as admitted by the applicant in combination with Buckland to include the step of adding a trailer with final CRC and length values as taught by Skarpness. One skilled in the art would have been motivated to make the modification since ATM cells must not have more than 48 bytes in the payload and a CRC and length values are necessary for error checking.

5. Regarding claim 4,

The combination of Prior Art and Buckland does not disclose generating an Nth AAL5 cell that includes said Nth data subset if  $41 \leq n < 48$  and generating an (N+1)th AAL5 cell that includes a trailer containing said total values.

Skarpness discloses when the current cell (Nth AAL5 cell) does not have at least 8 bytes open ( $41 \leq n < 48$ ), the system pads the remainder of the current cell and generates an additional cell ((N+1)th AAL5 cell) filled with padding except for the last 8 bytes for trailer data including AAL5 length and final CRC values (pg. 3, para. 30, lines 5-15).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as admitted by the applicant in combination with Buckland to include the step of generating an Nth cell if less than 8 bytes are open and generating an additional cell with trailer data with total CRC and length values as taught by Skarpness. One skilled in the art would have been motivated to make the modification since ATM cells must not have more than 48 bytes in the payload and a CRC and length values are necessary for error checking.

6. Regarding claim 10,

Prior Art does not disclose payload of said Nth AAL5 cell generated in (g) includes (40-n) zeros.

Skarpness discloses filling open spaces with padding data (zeros)(pg. 3, lines 9-13).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as admitted by the applicant in combination with Buckland to include the step of adding zeros as padding data as taught by Skarpness. One skilled in the art would have been motivated to make the modification since padding open spaces is usually done by filling them with zeros.

7. Claims 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art in view of Buckland, and in further view of U.S. Patent 5,867,509 ("Tanaka").

Regarding claim 5,

The combination of Prior Art and Buckland does not disclose total values are calculated by using intermediate CRC value and length value stored in said memory and last CRC and length values of said Nth data subset.

Tanaka discloses that frame length are updated and if it indicates the end of the frame and CRC calculation is performed (total values are calculated) for the currently received data and in agreement with a specific value  $V(x)$ , the absence of error is determined, thus ending the reassembly processing (Tanaka, col. 3, lines 20-31; claim 5 - total values are calculated by using each intermediate CRC value and length value stored in said memory and last CRC and length values of said Nth data subset).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5



cells as admitted by the applicant as Prior Art to include the calculation of total CRC and length values as taught by Buckland. One skilled in the art would have been motivated to make the modification to check for errors by comparing the final CRC calculation, after the last cell of a packet arrives, for the whole packet in the integrity checker 15 (Fig. 2) with the expected value transmitted in the packet (Buckland, col. 4, lines 8-13).

8. Regarding claims 8 and 9,

Prior Art does not disclose the limitations of claims 8 and 9.

Tanaka discloses that a management table shown in FIG. 10 stores a reassembly status variable that indicates a state before start, a state during reassembly, disposal processing, and the like, and also stores frame length data (length values) that indicates the data length of already received data associated with ATM cells received so far, the start and end addresses of received data, the intermediate value of the CRC calculation, and the like (Col. 2, lines 29-35; claim 8 – total CRC value of said original user data set is calculated by adding each intermediate CRC value stored in said memory with said last CRC value of said Nth data subset included in said final CPS packet; claim 9 – total length value of said original user data set is calculated by adding each intermediate length value stored in said memory with said last length of said Nth data subset included in said final CPS packet).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5

cells as admitted by the applicant as Prior Art to include the calculation of total CRC and length values as taught by Buckland. One skilled in the art would have been motivated to make the modification to check for errors by comparing the final CRC calculation, after the last cell of a packet arrives, for the whole packet in the integrity checker 15 (Fig. 2) with the expected value transmitted in the packet (Buckland, col. 4, lines 8-13).

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted Prior Art ("Prior Art") in view of U.S. Patent No. 6,711,126 ("Besset-Bathias").

Prior Art does not disclose that each CPS packet extracted in (b) includes a CPS packet header including a UUI field set to 26.

Besset-Bathias discloses that in the case of a segmentation, the UUI field has the value "26" to indicate receipt of an end of SSSAR SDU (Col. 2, lines 66-67; claim 6 – each CPS packet extracted in (b) includes a CPS packet header including a UUI field set to 26).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as disclosed by the applicant as Prior Art to include a step of including a UUI field with a value of "26" as disclosed by Besset-Bathias.. One skilled in the art would have been motivated to make the modification to indicate the end of the packet (Besset-Bathias, col. 2, lines 66-67).

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted Prior Art ("Prior Art") in view of U.S. Patent No. 6,449,254 B1 ("Hadjiahmad").

Prior Art does not disclose that each AAL5 cell generated in (c) includes an ATM header including a PTI field set to "000".

Hadjiahmad discloses that unassigned header 20c (Fig. 2C) can contain any binary value from 000 to 111 in PTI field 30 (Fig. 2B) (Col. 5, lines 30-31; claim 7 – each AAL5 cell generated in (c) includes an ATM header including a PTI field set to "000").

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL2 cells to AAL5 cells as disclosed by the applicant as Prior Art to include a step of including an ATM header with a binary value of 000 as disclosed by Hadjiahmad. One skilled in the art would have been motivated to make the modification since unassigned headers can contain any binary value from 000 to 111 in a PTI field to indicate the end of the packet (Hadjiahmad, col. 5, lines 30-31).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted Prior Art ("Prior Art") in view of U.S. Patent 5,805,821 ("Saxena").

Prior Art discloses that for converting N AAL5 cells (N indicates repetitive sequence of receiving and processing one or more AAL5 cells) including a user data set to AAL2 cells, the second ATM cell converter 12 (Fig. 1) must store all the AAL5 cells in a memory. It is inherent that the AAL5 cell includes a payload including a data subset of an original user data set (Application, pg. 4, para. 12, lines 3-5; claim 11 – receiving a

first AAL5 cell that includes a first payload including a first data subset of an original user data set; claim 11 – storing said first payload in a memory if said first cell is not a final AAL5 cell; claim 11 – receiving a next AAL5 cell that includes a next payload including a next data subset of said original user data set).

Prior Art discloses converting N AAL5 cells to AAL2 cells, which inherently contains a CPS portion (Application, pg. 4, para. 12, lines 3-4; claim 11 – generating a CPS packet by adding a packet header to said payload stored in said memory if said AAL5 cell received in (c) is not said final AAL5 cell).

Prior Art does not disclose emptying said memory and storing said next payload in said memory.

Saxena discloses a Just-In-Time-Scheduling technique (col. 15, lines 35+) in which when the buffer empties, the communication node 14 of Fig. 1 schedules the next input (col.17, lines 10-11; claim 11 – emptying said memory and storing said next payload in said memory).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL5 cells to AAL2 cells as admitted by the applicant as Prior Art to include technique to empty a buffer before the next input as taught by Saxena. One skilled in the art would have been motivated to make the modification so that the avoid delays due to buffering and reduce cost with minimal buffers.

12. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Prior Art in view of Saxena, and in further view of Tanaka.

Regarding claim 12,

Prior Art discloses converting N AAL5 cells (N indicates repetitive process of receiving and processing one or more AAL5 cells) including a user data set to AAL2 cells. It is inherent that AAL2 cells must correspond to CPS packet generated (Application, pg. 4, para. 12, lines 3-4; claim 12 – generating one or more AAL2 cells corresponding to said CPS packet generated; claim 12 – repeating (c) to (g) until said next AAL5 cell received in (c) is said final AAL5 cell that includes a final payload).

Prior Art does not disclose recording the length of said payload included in said generated packet.

Tanaka discloses that a management table shown in FIG. 10 stores a reassembly status variable that indicates a state before start, a state during reassembly, disposal processing, and the like, and also stores frame length data (length of said payload) that indicates the data length of already received data associated with ATM cells received so far (Col. 2, lines 29-34; claim 12 – recording the length of said payload included in said generated packet).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL5 cells to AAL2 cells as disclosed by the applicant as Prior Art to include a step of storing a reassembly status variable including storing frame data length as disclosed by Tanaka. One skilled

in the art would have been motivated to make the modification so that the system will know when the final AAL5 is received.

13. Regarding claim 13,

Prior Art does not disclose determining the final length by subtracting each length recorded in (f) from a total length of said user data set, said total length being included in said final AAL5 cell.

Tanaka discloses that a management table shown in FIG. 10 stores a reassembly status variable that indicates a state before start, a state during reassembly, disposal processing, and the like, and also stores frame length data (length values) that indicates the data length of already received data associated with ATM cells received so far, the start and end addresses of received data, the intermediate value of the CRC calculation, and the like (Col. 2, lines 29-35; claim 13 –

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL5 cells to AAL2 cells as admitted by the applicant as Prior Art to include the determination of final length by subtracting each length as shown in table 10 of Tanaka. One skilled in the art would have been motivated to make the modification to accurately calculate the final AAL2 cell length.

14. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art in view of U.S. Patent No. 6,185,209 B1 ("Wicklund").

Prior Art does not disclose that the final AAL5 cell includes its PTI field set to "001".

Wicklund discloses that the last cell of each packet has its PTI field coded to 001 (Col. 5, lines 43-45).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the steps of converting an AAL5 cells to AAL2 cells as disclosed by the applicant as Prior Art to include a step of coding the PTI field with "001" as disclosed by Wicklund. One skilled in the art would have been motivated to make the modification so that the system knows when the last cell of each packet has been received (Wicklund, col. 5, lines 43-45).

#### ***Allowable Subject Matter***

15. Claims 14-17, 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 14,

The prior art of record does not teach or fairly suggest generating a CPS packet by adding a packet header to said payload recently stored in said memory in (c) if said final length is greater than 48, extracting a final data subset of said original user data set

from said final payload, and generating a final CPS packet by adding a packet header to said extracted final data subset.

Regarding claim 16,

The prior art of record does not teach or fairly suggest extracting a final data subset of said original user data set from said payload recently stored in memory if said memory if said final length is less than 49 and generating a final CPS packet by adding a packet header to said extracted final data subset.

### ***Response to Arguments***

16. Applicant's arguments with respect to claims 1 and 11 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not



mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

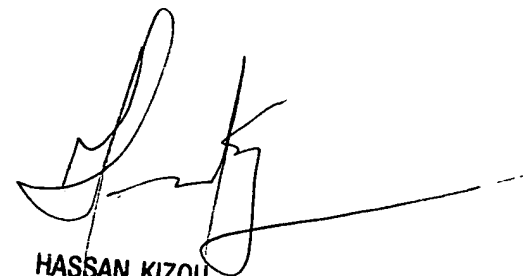
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Anthony Sol  
Examiner  
Art Unit 2662

3/28/2006



HASSAN KIZOU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600